Microenvironment based optimization of retinal induction using CRISPR-CAS9 reporter pluripotent stem cells as an expandable source of retinal progenitors and photoreceptors.

Grant Award Details

Microenvironment based optimization of retinal induction using CRISPR-CAS9 reporter pluripotent stem cells as an expandable source of retinal progenitors and photoreceptors.

Grant Type: Inception - Discovery Stage Research Projects

Grant Number: DISC1-08683

Project Objective: To generate CRISPR-Cas9 gene-edited retinal reporter PSCs to develop systematic and quantifiable methods to improve retinal differentiation.

Investigator:

Name:	Karl Wahlin
Institution:	University of California, San Diego
Type:	PI

Disease Focus: Vision Loss

Human Stem Cell Use: iPS Cell

Cell Line Generation: iPS Cell

Award Value: $232,200

Status: Active

Grant Application Details

Application Title: Microenvironment based optimization of retinal induction using CRISPR-CAS9 reporter pluripotent stem cells as an expandable source of retinal progenitors and photoreceptors.

Public Abstract:

Research Objective

To increase the efficiency of generating pure retinal progenitor cultures for use in transplantation and to probe general aspects of retinal development.

Impact

Our methods could increase the efficiency of obtaining transplantable patient specific induced pluripotent stem cell derived retinal cells for the treatment of blindness through cell replacement.

Major Proposed Activities

- Make stem cell based early retinal reporters as tools for optimization.
- Optimize cell differentiation, focusing on hypoxia and diffusible factors.

Statement of Benefit to California:

California is already a leader in retinal stem cell research with great emphasis placed on transplantation of fetal retinal progenitors. These cells show great promise as a short term tool for cell replacement. The ultimate goal will be to use a patients own cells for cell replacement and for that to happen PSC technology needs to be further developed. Our work will bolster the work of other California scientists by providing them with new and improved methods for obtaining transplantable cells.
